

EPA's Pilot Study to Estimate Asbestos Exposure from Vermiculite Attic Insulation

Background

Due to a variety of questions regarding vermiculite attic insulation, in the Spring of 2001, EPA began a small scale study to better understand the possible levels of asbestos in vermiculite attic insulation (VAI) and whether homeowners are potentially exposed to low levels of asbestos from vermiculite attic insulation. This preliminary, first phase study was designed to: (1) obtain a rough estimate of the amount of asbestos in attics with vermiculite attic insulation; and (2) obtain a rough estimate of a person's potential exposure to asbestos while performing common household activities. The results of this preliminary study do not indicate a need to change the Agency's longstanding and current guidance on managing asbestos, which is that homeowners should not disturb asbestos-contaminated material or, if disturbance is necessary, to hire professionals for removal. The Agency will use the results of this preliminary study to initiate further studies on vermiculite attic insulation and other asbestos related issues.

Study of Six Vermont Houses

The contractor hired by EPA, Versar Inc., has conducted 20 active simulations in six homes in Vermont and in a containment unit designed to simulate an attic environment in order to examine exposure to VAI. The pilot study examines the potential exposure associated with a number of activities, including:

- Installing and removing VAI;
- Performing wiring/small renovations in an attic that contains VAI;
- Using an attic that contains vermiculite insulation as a storage space;
- Living in a house where such VAI disturbances occur; and
- Background exposure associated with living in a house with VAI.

The study looked at six homes in Vermont with VAI – five were temporarily unoccupied and one was abandoned. Bulk samples of the VAI were collected and tested for asbestos contamination, as were ambient air samples from the attic, the living space, and outside the houses. Five of the houses were temporarily unoccupied at the time of the study and the insulation was not disturbed to avoid potential future exposure to the returning residents. Disturbances were conducted in the sixth abandoned house.

In these five houses, the asbestos content of the vermiculite was as high as 2% in bulk samples of the vermiculite attic insulation, yet asbestos was not detected in the air or dust samples. In the abandoned house, no detectable amount of asbestos was found in the bulk vermiculite sample. Yet, when the insulation was disturbed by performing six attic-use simulations (wiring, hanging a ceiling fan, etc.), small amounts of asbestos were detected in the air during the disturbance.

Study of Vermiculite Containing Products and Simulated Use

The study also sampled 10 vermiculite attic insulation products and simulated their use in the containment unit meant to represent an attic. The study analyzed five products from four different stores, as well as vermiculite from 3 different lots the Seattle Public Utility storage area, and two partially used bags of VAI from two residents of the State of Washington. The study analyzed 13 bulk samples of these 10 different vermiculite insulation products. Air monitoring was conducted during simulated consumer use of 6 of the products in the containment unit.

The results of these simulations showed that the disturbance of vermiculite attic insulation resulted in the release of asbestos fibers – the more aggressive the disturbance, the more fibers detected. These simulations also found that the absence of asbestos in the bulk VAI does not necessarily mean an absence of asbestos in the air after a disturbance.

General Conclusions of the Pilot Study

This small scale study provided the following key findings and identified areas for additional evaluation which EPA is seeking to address through its Asbestos Action Plan and research agenda currently under development:

- Disturbed vermiculite attic insulation can create a potential asbestos exposure risk to consumers.
- Bulk samples of vermiculite attic insulation that tested negative for asbestos contamination are not reliable for determining whether there are asbestos fibers elsewhere in the attic or whether a disturbance of the VAI would result in the release of asbestos fibers.
- Additional studies are needed to better understand any potential risks from asbestos contaminated vermiculite attic insulation and to develop more accurate analytical testing procedures.